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ABSTRACT

This paper focuses on the implementation of the multiple intelligences (MI) theory in 21st century teaching and learning environment, suggesting that it offers a new tool for effective teaching and learning at all levels. The eight current MI include: verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic, musical/rhythmic, interpersonal, intrapersonal, and naturalist. Despite research on the effectiveness of the MI theory, traditional teaching and learning strategies of lecture still prevail in school, with the expectation that all students learn in the same way. This paper looks at the different types of intelligences, offering a definition of MI, historical developments of MI, and application of the MI into the classroom social environment. It also discusses two new candidate intelligences: spiritualist and existentialist. The paper concludes that traditional ways of understanding pedagogy, and static methods of teaching, are giving way to the new classroom examination and application of the MI. It notes that in the process of employing the MI, teachers should also consider the cognition, language, and culture of each student. (Contains 36 references.) (SM)

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Implementation Of The Multiple Intelligences Theory In The 21st Century Teaching And Learning Environments: A New Tool For Effective Teaching And Learning In All Levels

ED 476 162

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Introduction

This study focuses on the implementation of the multiple intelligences theory in the 21st century teaching and learning environments, from which a new tool for effective teaching and learning in all levels emerges.

The discovery of Multiple Intelligences (MI) by Howard Gardner in the 1980s was an eye opener in the teaching profession. Even though most of the educators have been introduced to the MI, there is a need to go farther and find out how educators can effectively implement the MI in the classroom through strategic lesson planning and teaching.

In the process of visiting student teachers and veteran teachers in their classrooms, I have found out that traditional teaching and learning strategies of lecture still prevails in schools. In this situation, teachers find it easy to instruct students through presentation and direct instruction, expecting all students to learn in the same way. This situation calls for a deeper question on how can teachers effectively meet the instructional needs of the diverse student population in their classrooms. The second question would deal with, what new strategies teachers need to adopt into their teaching. The third question concerns, the sources for these new strategies, which can dramatically enhance effective teaching and learning in our schools. Through first hand experience in our classrooms, I have observed that these diverse students' learning and the teachers' instruction must be based on the Multiple Intelligences. That is why a fresh examination of implementation of MI in the classroom is significant in this study. The study looks into the different types of intelligences and gain knowledge about the description, the development and the application of each of them. Included also, are specific different lesson ideas to incorporate the intelligences into the classroom.

In order to achieve the goals of this study, key areas pertinent to multiple intelligences are examined. These include: definition of multiple intelligences, historical development of the multiple intelligences, the description and the application of the multiple intelligences into the classroom social environment. Consequently, conclusions, implications and recommendations about the study are provided.

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Gardner And The Definition Of Multiple Intelligences

Earlier, Howard Gardner had suggested "there are at least seven ways that people have of perceiving and understanding the world. Gardner labels each of these ways a distinct 'intelligence'— he thus sees these multiple intelligences as, a set of skills, which allow individuals to find and find answers to genuine problems they face" (Gardner, 1983). Hence, Gardner doesn't see intelligence as a monolithic "capacity," "thing' or "gift," but "intelligence" include "a set of dispositions and is thus multiple rather than unified" (Propper, 2000 p.1, 2).

Further, Gardner understands an "intelligence" to be a group of abilities that:

1. Is somewhat autonomous from other human capacities.
2. Has a core set of information-processing operations.
3. Has a distinct history in the stages of development we each pass through
4. Has plausible roots in evolutionary history (Gardner, 1983)

It is important to note that the theory of multiple intelligences affirms that human intelligence must be characterized by: 1) a set of skills that enable a person to resolve genuine problems, 2) the ability to create an effective productive product or offer a service that is valued in a culture, and 2) the potential for recognizing or creating problems, thereby establishing the necessity for the new knowledge (www.harding.edu; Rogers, n.d).

These multiple intelligences as developed by Gardner provide different ways in which teachers can incorporate them into their teaching mechanisms in the classroom environment. This may involve what teachers already do in the classroom and expanding that to enable them to be more successful with all of their students. Wilkens' study (1996) shows that 10%- 25% of the human brain is actually used. The theory of multiple intelligences ensures whole-brain learning. The use of the different parts of the brain will guarantee that teachers as well as students are able to use more of their brains.

Howard Gardner is currently a professor at Harvard University, and explains that early in his career, he had been a devoted student of Piaget; however, as he probed more deeply in his own study on the development of cognition, Gardner found out that Piaget's understanding of the development of children's cognitive processes are "too narrowly focused" (Wilson, 1998 p.1; http://www.education-world.com; Gardner & Hatch, 1990). Thus, Gardner did not believe in the existence of "one form of cognition" that "cuts across all human thinking (http://www.education-world.com).

Earlier, Gardner observed that there are at least seven intelligences and that even though these intelligences are not dependent upon each other, they seldom operate independently (Brualdi, 1996; Gardner, 1993; http://tip.psychololgy.org). However, Gardner argues, "the intelligences are used concurrently and typically complement each other as individuals develop skills or solve problems" (Brualdi, 1996 p.2). For example, dancers can succeed in their performances if they have the following:

1. Strong musical intelligence to understand the rhythm and variations of the music.
2. Interpersonal intelligence to understand how they can inspire or emotionally move their audience through their movements.
3. Bodily – kinesthetic intelligence to provide them with the agility and coordination to complete the movements successfully (Brualdi, 1996 p.2).

A New Spin on The Definition of Multiple Intelligences

Ruth Propper in the January Issue (2000) identified in her article that there is "*A new Spin on the Definition of multiple intelligences*." In the Intelligence Reframed: Multiple Intelligences for the 21st Century, Gardner himself has expanded his definition and reformulated the 1983 definition of multiple intelligences. Intelligence according to Gardner, is "a biopsychological potential to process information in a cultural setting to solve problems or create products that are of value in a culture" (Propper, 2000 p.1; http:/ww.pzharvard.edu). In a nutshell, "Intelligence is the ability to find and

solve problems and create products of value in one's own culture" (http://surfaquarium.com; http://www.education-world.com; http:/www.earlychildhood.com; McKenzie, 2000 p.2). As far as what exactly constitutes an intelligence, Gardner rejected traditional factor analytic approaches and instead suggested that "a faculty must meet eight criteria in order to be considered as intelligence" (Propper, 2000 p.1; Gardner, H. 1993 & 1999).

Historical Development of The Multiple Intelligences And The Eighth Intelligence

Traditional Perception of Intelligence

Traditionally, we have been led to believe that we are born with a certain potential for intelligence, and once we have gone through normal growth and education, we may reach and maintain that level of intelligence (http:/www.tecweb.org) This level can be determined by taking a pen and paper test using words, numbers, and pictures. This belief is not particularly encouraging to a community of diverse learners.

Concerning matters of cognition, linguistics, and culture, Gardner's theory of multiple intelligences "challenges the traditional view of intelligence as a unitary capacity that can be adequately measured by IQ tests. Instead, this theory defines intelligence as an ability to solve problems or create products that are valued in at least one culture" (http://www.pz.harvard.edu/). Thus, IQ should never "be measured as an absolute figure in the way that height, weight or blood pressure are; " because IQ should not be perceived as "a single fixed entity which can be measured by a pencil and paper test" (http://www.acceleratedlearningnework.com; Armstrong, 1998 p.2). Hence, the question is not how smart students and adults are, but how they are smart ((http://www.acceleratedlearningnework.com).

Frames of Mind: The Theory of Multiple Intelligences

In his book Frames Of Mind: The Theory of Multiple Intelligences, Howard Gardner gives more hope with the theory of multiple intelligences. This theory proposes, "People are not born with all of the intelligences they will ever have. Intelligence can be learned and improved throughout life" (Gardner, 1983 p.41). Thus, everyone is intelligent in a variety of ways and can develop each aspect of intelligence to an average level of competency. This theory has great implication for the success and self-esteem of students. Intelligence, as defined by Gardner is "the ability to solve problems or fashion products that are valuable in one or more cultural settings" (Armstrong, 1984 p.58; Gardner & Hatch, 1989; Loughlin, 1999 p.1). This allows for people in one culture to be just as intelligent as people in another. Problems or necessary products might vary from one culture to another. In a traditional Western culture it is understood that being able to use words and numbers is what makes a person smart. If students are not word or number smart, they in effect, are not very intelligent by this measure. Gardner uses an example of people in the South Pacific, "These people are considered smart if they are able to navigate by the stars. Numbers and words do not help them at all. Being space smart is more important to them" (Gardner, 1983, p.71).

Naturalist – The Eighth Intelligence

Gardner has identified the eighth intelligence at this time, although he allows that there might be many more out there. In 1996 Gardner added the eighth intelligence called "naturalist." Gardner demonstrates that naturalist intelligence "designates the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations)" (www.pz.harvard.edu; www.education.com; www.lesley.edu; www.newcityschool.org). He further shows that the naturalist ability was obviously of "value in our evolutionary past as hunters, gatherers, and farmers; it continues to be central in such roles as botanist or chef. I also speculate that much of our consumer society exploits the naturalist intelligences, which can be mobilized in the discrimination among cars, sneakers, kinds of makeup, and the like. The kind of pattern recognition valued in certain of the sciences may also draw upon naturalist

intelligence" (www.education.comwww.lesley.edu; www.newcityschool.org; www.ibiblio.org; Checkley, 1997, p. 12).

Gardner discussing about the "eighth intelligence" with Kathy Checkley, in an interview for Educational Leadership, The First Seven... and the Eighth. Gardner said, "The naturalist intelligence refers to the ability to recognize and classify plants, minerals, and animals, including rocks and grass and all variety of flora and fauna. The ability to recognize cultural artifacts like cars or sneakers may also depend on the naturalist intelligence. Some people from an early age are extremely good at recognizing and classifying artifacts. For example, we all know kids who, at 3 or 4, are better at recognizing dinosaurs than most adults (Armstrong, 1998; http://www.education-world.com).

On the same breath, Gardner recognized Charles Darwin as a principal example of this type of intelligence. "The naturalist intelligence is meshed with Gardner's definition of intelligence as '...the human ability to solve problems or to make something that is valued in one or more cultures'" (http://www.education-world.com). The naturalist intelligence satisfied Gardner's specific criteria by answering the following questions: 1) is there a particular representation in the brain for the ability? 2) are there populations that are especially good or especially impaired in an intelligence? And 3) can an evolutionary history of the intelligence be seen in animals other than human beings? (http://www.education-world.com).

A Test For The Intelligences

Prior to 1996, there were only seven intelligences (Brualdi, 1996). Each of the defined intelligences has passed a test. There are eight criteria developed by Gardner and his associates, which define and demonstrate the characteristics of the intelligences. These are:

1. Each of the intelligences can potentially be isolated by brain damage.
2. Each of the intelligences exists in exceptional people (Prodigies, Idiot Savantes and Exceptional Individuals)
3. Each of the intelligences has a process of developing during normal child development and has a peak end-state performance.
4. Each of the intelligences is evidenced in species other than human beings.
5. Each of the intelligences has been tested using various measure not necessarily associated with intelligence.
6. Each of the intelligences can work without the other being present.
7. Each of the intelligences has a set of identifiable operation.
8. Each of the intelligences can be symbolized or has it's own unique symbol or set of symbols (Gardner, H. 1993 & 1999; http:// www.massypsy.com; Rief, 1993 p.112; Walter McKenzie, http://surfaquarium.com).

The intelligences identified by Gardner all meet these eight criteria. He suggests that there might be others, and that is why his theory is called Multiple Intelligences. He has left room for more to be added, just as he recently added the eight one, the naturalistic intelligence.

Gardner Brings New Ways of Teaching and Student Assessment

Many scholars and teachers agree that, when Howard Gardner's book, Frames of Mind: The Theory of Multiple Intelligences (Basic Books, 1983) appeared on the scene, it emerged and provided answers to many questions for veteran teachers. All teachers had students who didn't fit the mold; they knew the students were bright, but these students didn't excel on their tests. Gardner's claim that there are several different kinds of intelligence gave teachers and others involved with teaching and learning a way of beginning to understand those students. Teachers would look at what students could do well, instead of what they could not do (Guignon, 1998 p.1).

Consequently, Gardner's books such as The Unschooled Mind: How Children Think and How Schools Should Teach (Basic Books, 1991) and Multiple Intelligences: The Theory in Practice (Basic Books, 1993) helped teachers understand how multiple intelligences could help them teach and evaluate their students in new and better ways (Guignon, 1998 p.1).

The areas, where intelligences have been identified, are logical/mathematical, musical/rhythmic, verbal/linguist, interpersonal, intra-personal, bodily/kinesthetic, visual/spatial, and naturalistic (Brualdi, 1996; http://www.tecweb.org/eddevel/gardner.html)

Implementation of The Gardner's Eight Multiple Intelligences In The 21st Century Classroom

This section will scrutinize all of the Gardner's eight multiple intelligences, with a goal of finding strategies that may foster the implementation of these intelligences into the 21st century classroom. Description of the intelligences, demonstration of how these intelligences are developed, and their effects on teaching are provided. This process sheds light on the applicability of the Gardner's eight multiple intelligences into the teaching and learning social environment.

Verbal/Linguistic Intelligence ("word smart)

Description

This intelligence involves the use of language and words, whether written or spoken. It is "The ability to read, write, and communicate with words" (Armstrong, 1998 p.2) and "a sensitivity to the meaning and order of words" (Guignon, 1998 p.2). It involves having a mastery of language and the ability to effectively manipulate language to express oneself rhetorically or poetically (Brualdi, 1996). It also allows one to use language as a means to remember information. Some statements that may be made by an individual with this particular intelligence would be, "I love to read books. Words and language fascinate me. Spelling comes easily to me. I lose track of time of time when I am in a library or bookstore. I enjoy playing word games and puzzles. People enjoy listening to me tell stories. I write about things I read and experience. I can decipher and decode words I have never seen before" (Wilkens, 1996).

Development

The development of the verbal/linguistic begins in infancy, when children babble. Certainly, research has shown that verbal-linguistic intelligence begins developing "while a fetus is still in the womb and that babies who have been read to, sung to, and talked to before birth have a head start in this area" (Loughlin, 1999 p.1). It grows into single word statements when children are around eighteen months old. By age two, many children are able to talk in simple sentences. Beyond the basic grasp of language skills, students have to specifically be taught the details of their home language. While almost everyone goes through similar developmental stages, some people take longer to master this intelligence than others (Wilkens, 1996).

Effects on teaching

First and foremost, teachers need to become aware of the multiple intelligence theory, and take inventory of the students to see where they are on Gardner's scale. The teacher who is a linguist learner stresses a curriculum based on language. This entails reading, writing, speaking, "and conversing in one's own or foreign languages" (Armstrong, 1998 p.2). The whole-language approach is a natural one for this teacher. Students with more concrete learning styles may have a difficult time in this atmosphere unless the teacher stays alert to their needs (Wilkens, 1996).

Many students have a difficult time with this type of teaching. The words don't mean as much unless there is something that the students can connect it to from their prior knowledge. Thus, even though linguistic/verbal intelligence benefits children, it must be combined with some of the other intelligences in order to meet the learning needs of all students (Brualdi, 1996).

Some lesson plans that can be useful for this type of intelligence include biographies, book reports, brainstorming, essays, discussions, journal writing, letter writing, poetry, library research, vocabulary, formal speaking, and storytelling. Predictions are a great activity and word games and puzzles can keep these learners occupied (htt://www.metronet.com; http://www.tecweb.org). Hence, for every classroom to be language rich, students should actively participate in speaking, expressing opinions, debating, and asking questions in the process of learning (Loughlin, 1999; Wilson, 1998).

Logical/Mathematical Intelligence ("number/reasoning smart)

Description

This intelligence uses numbers, sequencing, and patterns to solve problems. Thus, it "deals with the ability to think logically (and systematically) inductively, and to some degree deductively; categorically, to recognize patterns, both geometric and numerical; as well as the ability to see and work with abstract concepts" (Wilson, 1998 p.2). Students with this intelligence have an "aptitude for numbers, reasoning and problem solving" (Armstrong, 1998 p.2). It is most often associated with scientific and mathematical thinking (Brualdi, 1996).

Student with this type of intelligence may make statements such as "Solving number problems is easy for me. Manipulating numbers fascinates me. I can understand and interpret graphs easily. I often see patterns and sequences in things. I am good at explaining how to solve problems. Computers fascinate me. I expect everything to have a rational answer" (Wilknes, 1996).

"Plays with questions" is an excellent way of describing these students. These learners like to figure things out by constantly asking questions, exploring, experimenting, and they "grasp games that involve sophisticated strategies-like chess; ... they may be fascinated with computers or with puzzles that involve logic and reasonable abilities (Wilson, p.2; Winters, 2001).

Development

This intelligence begins during infancy. It starts with babies inspecting objects with which they come into contact. They begin to realize causes and effect. As soon as babies are able to talk, they very often are able to quantify low numbers of items, such as 1, 2, and 3. They might even be able to count up to even more, but they don't fully comprehend the value and meaning of numbers until the age of 4 or 5. This intelligence doesn't peak until adolescence or early adulthood (Wilkens, 1996).

Effects on teaching

The teacher who is a logical/mathematical learner tends to concentrate on concepts that are both logical and abstract. This teacher will need to make a deliberate effort to focus on the fact that it is appropriate for students to be artistic and to think intuitive leaps (Wilkens, 1996).

Some wonderful lesson planning ideas to accompany this particular intelligence includes calculations, categorizing, graphic organizers, numbers, patterns, problem solving, time lines, experimentations, and compare and contrast exercises. Curriculum developers and teachers should incorporate logical-mathematical higher-order thinking skills into other educational disciplines. Thus, teaching and learning strategies such as graphing, analogies, probability theory, classifying/sequencing activities, playing number and logic games, solving puzzles and questioning should be used across the curriculum in order to enhance learning (Armstrong, 1998; Loughlin, 1999).

Visual/Spatial Intelligence ("picture smart")

Description

Those students with visual-spatial intelligence have "The ability to visualize objects and spatial dimensions, and create internal images and pictures" (Propper, 2000; Wilson, 1998). This intelligence has to do with the use of shapes, colors, and the relationships among objects. This intelligence gives learners the ability to manipulate and create mental images in order to solve problems. It is not limited to visual aspects. Spatial intelligence is also formed in blind children (Gardner, 2001).

Students with this type of intelligence may make statements such as " I often draw or doodle during staff meetings. I can express my mood effectively with color. I enjoy building things with blocks or other objects. A blank page and markers do not intimidate me. I enjoy watching television. I can draw pretty well. Spending time at an art museum relaxes me" (Wilkens, 1996).

"Plays with pictures" is another way of describing these learners (Winters, 200). These students enjoy jigsawing puzzles and mazes, Finding hidden picture puzzles, constructing things with blocks, drawing, designing, and looking at pictures, slides, videos, and films (Wilson, 1998;). Imaging is interesting and easy for these students, puzzles, and reading charts and map entertain them.

Development

The visual/spatial intelligence is more difficult than the other intelligences to seek in young children. It begins when infants can discriminate against the different people who surround them. Progression in this intelligence begins at school age, when they are able to imagine what an object might look like from a different point of view. Adolescence brings on the full grasp of this intelligence (Wilkens, 1996).

Effects on teaching

The teacher who is a spatial learner will provide a great learning environment for those who have been considered visual learners. This is extremely important and beneficial for the teacher using SDAIE methods such as bridging, contextualization, schema-building, and modeling. These artistic students do very well in this classroom. The tough side of this teaching method is that the other students may be artistically challenged. They must be helped in this regard.

Some wonderful teaching lessons for this intelligence include collages, visualization, posters, pictures, patterns, graphs, tables, illustrations, puzzles, designs, flow charts, imagination, mapping, labeling, multicolored construction paper, paints, glue, markers, colored chalk, scissors, beads, yarn, clay, and weaving boards (Armstrong, 1998; Beekman, (n.d.); Lazear, 1991. The obvious thing about the above activities is that they are all very visual, and include hands on characteristics about chem. There is "accurate mental visualization, and mental transformation of images" (http://www.pz.harvard.edu).

Hence, teachers should be aware that charts, outlines, mindmapping, highlighting with color and visuals accompany lectures as teaching and learning strategies, which engage visual learners; classrooms appearance accompanied by "attractive bulletin boards, a floor or desk lamp, circular seating, cut flowers or a green plant, and adding color with fabric or rugs are just a few ways the class can be made more aesthetically pleasing and a power learning tool ..." (Loughlin, 1999 p.5).

Bodily/Kinesthetic Intelligence ("body smart")

Description

This intelligence uses the body for self-expression. In a traditional classroom, these students are called "overly active" (Armstrong, 1998). Students with this intelligence skillfully manipulate objects. Good examples of these people include dancers, actors, athletes, choreographers, sculptors, surgeons, mechanics, and craftspeople (http://www.pz.harvard.edu). Students endowed with this intelligence like movement, making things, and touching. Their communication is through body language and is taught through physical activity, hands-on learning, acting out, role-playing. Tools may include equipments and real objects. This intelligence challenges the popular belief that mental and physical activities are unrelated (Brualdi, 1996; http:// www.metronet.com; htt://www.tecweb.org).

Students with this specific intelligence may make states like "I am involved in a regular exercise program. I enjoy spending time in a park doing physical activity. I willingly take an active part in school sports. I cannot sit still for very long. I learn better when I am able to touch what I am learning about. I love spending time outdoors. I enjoy dancing" (Wilkens, 1996).

Another way of describing this intelligence is "playing with moving" (Winters, 2000). This is a simple description, which explains the kinesthetic aspect of this intelligence. Teachers should not misconstrue this type of learning as hyperactivity, because it is simply an active individual trying to get the most out of the information. Hence, students with this kind of intelligence have capacities such as control of "voluntary movements, control of "preprogrammed" movements, expanding awareness through the body, the mind and body connection, mimetic abilities, and improved body functioning (Lazear, 1991).

Effects on teaching

The teacher who is a kinesthetic learner will have a classroom full of things to manipulate and will probably encourage experiential learning (Lazear, 1991). The classroom will be filled with movement. This may be a challenge for the logical/mathematical learner because of the lack of personal concentration (Wilkens, 1996).

Some activities in which teachers can implement in the classroom to accompany this intelligence may include field trips, charades, body maps, acting, hands-on tasks, games, movement,), inventing, movement, role playing, sports games, martial arts, and dancing (Armstrong, 1998; Lazear, 1991; http://www.pz.harvard.edu).

Musical/Rhythmic Intelligence ("music smart")

Description

This intelligence includes the ability to recognize and compose musical pitches, tones, rhythms, melody, and sounds, sing well, understand and appreciate music (Armstrong, 1998). Examples of these individuals include musicians, singers and composers. To develop this intelligence, a "music smart" student must have musical ear (for auditory functions), but it is not necessary for the knowledge of rhythm (Brualdi, 1996; http://www.thomasarmstrong.com; http://www.harding.edu; http:/www.metronet.com).

Hence, this kind of student likes singing, playing instruments, and generally responds to music. Statements made by these students include, "I sing along with the radio. I am a member of a choir. I can play one or more musical instruments. I work more effectively to background music. It irritates me when someone sings off key. I have a good sense of rhythm. I often remember advertisement jingles" (Brualdi, 1996

"Plays with music" is another way of describing musical students. They are found hammering tunes, singing songs, and always listening to music. These students always excel at remembering melody, noticing the rhythms of life, and keeping perfect time (Winters, 1996).

Development

Infants are exposed to the musical/rhythmic intelligence earlier than any other intelligence. They begin to hear music and sound as early from in the womb. The first sign of this intelligence is in infancy when they mimic sounds. By school age, most children know what a song is and can reproduce tunes; however, the ability to actually read and write music is another theory, and must be learned (Wilkens, 1996).

Effects on teaching

A teacher who is a musical learner will tend to have a relaxed classroom, but may find it harder to relate to those students who are not "music smart" (http://thomasarmstrong.com). As a caution, this type of teaching must be careful of leaving the other children and intelligences out of the classroom. Remember that the goal of effective teaching is not to leave any student out of the learning loop.

Lesson activities that may be included in the classroom are chants, creating concept songs, illustrations with sounds, listening, lyrics, mood music, raps, percussion, rhythms, singings, movements or dance, instruments and musical expressions (Armstrong, 1998; Wilson, 1998; http://www.acceleratedlearningnetwork.com). Teaching tools may include "musical instruments, music, radio, stereo, CD-ROM, and multimedia" (http://www.tecweb.org). Teachers should be vigilant not to overlook students who are not interested in this type of intelligence (McKenzie, 1999).

Interpersonal Intelligence ("people smart")

Description

As social being we thrive and grow by being involved with other people. Thus, interpersonal intelligence is the "ability to interact with others" understanding them well, and interpreting their behavior, such as thinking, goals, temperaments, moods, desires, motivations, and feelings through verbal and non-verbal communication accordingly (www.ibiblio.org; www.pz.harvard.edu; www.education-worl.com; www.harding.edu; Wilkens, 1996). Examples of people with this intelligence include teachers, parents, sales people, social directors, travel agents, politicians, religious leaders, therapists, etc. (www.metronet.com; www.ibiblio.org; www.pz.harvard.edu; www.education-world.com). While personal intelligence appears to be simple, different cultures and

customs must be put into consideration, because what is normal in one culture may be offensive in another.

An individual with this intelligence may make statements such as "spending time with friends helps me unwind. I would much rather learn new material with a group of people. I spend often spend time chatting with friends. I am more productive when I work with a team. I very rarely do extracurricular activities alone. I often find myself in a group without consciously initiating the process" (Wilkens, 1996). A person with this intelligence also says, "I am good at persuading people to do things my way. People come to me for comfort and moral support" (Wilkens, 996).

Finally, students with this intelligence may be described as "plays with socializing" (Blackmore, 1996; Winters, 2000). These students are group/people oriented, work well with others through interactions, and being alone may be considered as complete loneliness; because interpersonal feelings and intentions of others are concerns of these students (Brualdi, 1996; McKenzie, 1999; www.tecweb.org). They understand, communicate with people, and "facilitate relationships and group processes" (Wilson, 1998 p.2).

Development

This intelligence begins with parental bonding. Wilkens (1996) informs us that very early in life, people begin to recognize and accept familiar others. Between the ages of two and four, this development continues as children develop meaningful relationships with people beyond their family, such as friendships (www.tecweb.org). The student's ability to recognize the needs of other people through body language plays an important role in the development of interpersonal intelligence.

Effects on teaching

The teacher who possesses interpersonal intelligence will incorporate cooperative learning teaching and learning style in the classroom; because interpersonal students can be taught through strategies such as group activities, seminars, and dialogues. The pedagogical tools of teaching and learning may include telephone, audio conferencing, time and attention from the teacher, video conferencing, writing, computer conferencing, and email (www.tecweb.org). It is worthy noting that students with interpersonal intelligence would be considered a "talkative" and "too concerned about being social" in a traditional schooling environment (McKenzie, 1999).

However, the interpersonal intelligence teaching strategy may be too much for the introverted students. Therefore, the teacher engaging both extrovert and introvert students should find a middle ground where all students can be taught effectively, without leaving anyone of them out of the learning loop.

Intra-personal Intelligence ("self smart")

Description

Students with intra-personal intelligence ("self smart") have the capacity to accurately know their self, understand their own interests, goals, strengths, motivation, determination, ethics, integrity, imagination, thoughts, and innermost feelings (Armstrong, 1998; Lauphlin, 199 p.7; Wilson, 1998; www.metronet.com). These students shy away from others, are in tune with their inner feelings, have wisdom, intuition and motivation, strong will, confidence, opinions, and are "in touch with their own feelings, values, and ideas" (Armstrong, 1998; www.tecweb.org; www.surfaquarium.com; Brualdi, 1996; MacKenzie, 1999). Strong intra-personal intelligence may lead to self-esteem, self-discipline, self-enhancement, and strength of character which may be used to solve internal personal problems (www.ibiblio.org); because they work alone in their own pace, producing very unique results (Winters, 1996; Brualdi, 1996).

Statements common with intra-personal students involve, "Processing my thoughts alone is very important to me. I regularly think about my day and reflect on what I have accomplished. I can identify the things I am good at. I think that I am strong willed. I enjoy spending time by myself. Spending time with lots of people makes me nervous and agitated. I read or attend seminars for self-improvement," and " I have specific and realistic goals that I am working toward" (Wilkens, 1996).

Development

Intra-personal intelligence is recognized when a baby knows that he/she is separate from the mother. The ability to identify the difference between feelings and events that lead up to this intelligence is important. Strong personal likes and dislikes are the ending of the development of this intelligence. It is very personal and is outwardly portrayed only through other intelligences such as writing, music, and movement (Wilkens, 1996).

Effects on teaching

Students with intra-personal intelligence are "taught through independent study and introspection," and the teaching tools connected with these independent learners include books, independent research projects, autobiographies, personal connections, goal setting, thinking strategies, expression of feelings, creative materials, diaries, privacy, silent reflections, and personal projection (www.tecweb.org).

A teacher who truly understands this type of intelligence should be supportive to inter-personal intelligence students, who may find trouble in interacting and functioning in a cooperative learning environment. Though very difficult to understand, teachers who teach intra-personal students should understand that they would rather do their learning activities alone.

Naturalist Intelligence ("nature smart")

Description

Recently, Gardner added the eighth intelligence called naturalist intelligence (www.education.com). Individuals with naturalist intelligence have the ability to distinguish among, identify and classify patterns in nature, and use features of the environment, (www.ibiblio.org; www.pz.harvard.edu). Students with this intelligence will be able to identify birds, plants, and stars; as well as describing the make of cars around them (Holmes, 1999). Learners with naturalist intelligence "love outdoors, animals, field trips," and finally, they "love to pick up on subtle differences in meanings" (McKenzie, 1999). Examples of this intelligence include farmers, hunter-gatherers, gardeners, botanists, geologists, florists, archaeologist, etc. (www.pz.harvard.edu; www.ibiblio.org).

Development

The naturalist intelligence begins at the early stages of children development, in an effort to discover the elements around them, and finding ways of how to coupe with the surrounding natural environment. This intelligence becomes more evident during school age through adolescent.

Effect on teaching

The teacher with the naturalist intelligence will tend to concentrate on outdoor activities, trips, and identification and classification of patterns in nature. Teachers should help students acquaint themselves with nature and consequently help them make sense of the world of plants and animals (www.newcityschool.org). Students can utilize this intelligence in recognizing, sorting, and organizing sports trading cards, automobiles, athletic shoes, etc. (www.newcityschool.org).

Teachers should provide a favorable environment for naturalist intelligence to take place. For example, the social science teacher may ask her/his students to create categories to classify Civil War generals, World War 1 & 2 Allies, "and organize them in a way that explains events; allowing first-grade "docents" in the class' Plant Museum; arranging the student-drawn Mona Lisas according to some framework, having a student share and explain a collection of cards, matchbooks or rocks; or making a point of taking a class outside, to a nearby field or on a trip to a nature preserve", etc. (www.newcityschool.org). Finally, in the 21st century technological advancement, teachers should allow students to learn by organizing and classifying web sites or reference sources, as well as allowing them develop schemes for assessing information or standards for web page design; however, we should watch out for those students who may learn better outdoor more than in the school computer lab (www.lesley.edu).

Candidate Intelligences

Apart from the eight multiple intelligences discussed in this study, spiritualist, and existentialist are the new candidate intelligences. This study postulates that spiritualist intelligence is the ability to discern our spirituality, need for spiritual attention, and the desire to commune with the divine;

whereas, individuals endowed with existentialist intelligence would be concerned with basic questions of existence (www.pz.harvard.edu). Gardner ended up rejecting both of these intelligences, because they do not meet all of the eight criteria other intelligences so well meet.

Conclusions

The traditional way of understanding pedagogy and the static methods of teaching are giving way to the new examination and application of the multiple intelligences in the 21st century classroom. If the purpose of developing these multiple intelligences to our classrooms is to give our students more avenues to succeed in their learning process, then academic institutions should carefully examine the broad spectrum of educational issues, which involve pedagogy, curriculum design and development, teaching and learning strategies, lesson plans conducive academic learning environments, suitable testing and assessment strategies, and holistic approach to education. Consequently, the Gardner's eight multiple intelligences should be employed in teaching and learning, so as not to leave any student out of the learning loop like the traditional schooling has done.

In the process of employing the multiple intelligences, teachers should consider the cognition, language, and the culture of each student. Moreover, some students may be bicognitive, bicultural, and bilingual; and while some elements of multiple intelligences may be correct to one culture may be offensive to the other. Let us avail these multiple intelligences to the students, and they will choose ways in which they can learn best. The only offense we may commit in the process is to overemphasize some of the intelligences at the expense of others. Striking the balance, and leaving no student out of the learning loop should be the motto.

As far as adults are concerned, understanding the theory of multiple intelligences is important because it "gives adults a whole new way to look at their lives, examining potentials that they left behind in their childhood (such as a love for art or drama) but now have the opportunity to develop through courses, hobbies, or other programs of self-development" (Armstrong, 1998-2000).

Like the views of Gardner and his students of multiple intelligences, I believe that existentialist and spiritualist intelligences are in the cooking. They may not meet the eight Gardner's criteria of multiple intelligences now, but I think with time they will, because the questions of existence and spirituality are real, and we have to one day come out with ways of explaining them.

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